Facial Features of the Ancient Rapa Nui

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Introduction

Human osteological research was a part of the 1987-88 KonTiki Expedition to Easter Island[1]. As a part of this research, cranial casts were produced from six well-preserved skulls (three males, three females) collected by the Norwegian Expedition of 1955-56, by Rapu and Haoa in 1978 and by the 1981 Easter Island Anthropological Expedition (See Appendix 1). The original remains are housed within the collections of the Sebastian Englert Museum on Easter Island and the University of Minnesota (E47, Hekii, G2), and the casts and molds with the Department of Anthropology, University of Wyoming.

In 1989 University of Wyoming conducted a special museum curation project on Easter Island funded by World Monuments Fund[2]. As a part of this museum enhancement project for the Sebastian Englert Museum, facial reconstructions were made from two of the six casts prepared in 1987-88. The two faces (one adult male and one adult female) were produced in laboratories in Wyoming, utilizing a new technique which produces light-weight durable facial reproductions with excellent detail. The two faces were then transported to Easter Island by the 1989 curation team in specially designed packing crates and placed on display at the Sebastian Englert Museum. Two identical copies of these "living faces" of the prehistoric Rapa Nui are also on display at the Anthropology Museum, University of Wyoming in Laramie.

Methods

The same basic approaches used by physical anthropologists, artist-anthropologists, and forensic scientists in the production of faces on the skulls of unidentified persons in a medico-legal context were utilized in this project. Such approaches, which make use of standard tissue thicknesses derived from carefully controlled studies in autopsy and dissection room settings (Rhine and Moore 1982) are accurate and very useful in attaining positive identification of victims of crime (Krogman and Iscan 1986, Stewart 1979, Snow and Gatliff 1970). Thus in theory the methods should be quite accurate in reconstructing the facial features of the prehistoric predecessors of contemporary peoples. For these reasons museums throughout the world have utilized basically the same methods as law enforcement in producing living faces. Their interests are, of course, in reconstructing ancient people for display and not identification. For quite explainable reasons some minor differences in technique have developed between the artist-anthropologist working in a museum context and those working for law enforcement. In the law enforcement setting speed and accuracy are of the essence, and aesthetics and durability of the product are less important. Often the faces are produced on the actual skull of the unidentified decedent without a cast ever being made. They are produced in clay, without color added to the face since only a black and white photograph (for use in newspaper or in police bulletins) is needed. Soon after the faces are photographed (and often a positive identification obtained) the face is disassembled and the cranium returned for litigation or for burial.

In the instance of prehistoric cases for museums, the concerns and constraints are somewhat different. Casts are essential in order to not tie up valuable museum specimens, and in some cases today, they might even violate regulations governing the display of actual human remains. Life-like color, surface texture and other aesthetic concerns are also important for public display. In the case of this project where long distance transportation was a concern too, the very heavy and yet fragile clay faces most generally used were considered inadequate. Experimentation was done, therefore, with a new process of casting the clay mold of the finished face to produce a final product which is hollow, light weight and much more durable than the soft clay faces. They are, of course, breakable like most other casts, and so care was still necessary in their transportation to the Sebastian Englert Museum.

Beyond these few differences, the procedures utilized in this project were much like those of a police case. Standard tissue thickness markers were prepared by cutting long pencil sized erasers to the prescribed lengths in millimeters. These prescribed lengths differ between adult males and adult females, and between Whites, Blacks, American Indians, Asians, and other racial groups. In the case of East Polynesian faces, such as those from Easter Island, the basic standards for Caucasoids were utilized. Some final adjustments for such things as lip eversion and thickness and flare of the nostrils were madebased upon knowledge of contemporary Rapa Nui facial physiognomy.

Application of the markers was done by gluing them to specifically designated points (21 standard locations on the skull cast, according to Rhine, 1982). Once all markers were in place and secure, an artist's plastina modeling clay was used to connect between the points and establish the desired facial tissue thickness. Care was taken to keep each marker in sight at all times, and to apply the clay evenly between markers. Keeping each tissue thickness marker in view assures maintenance of exact prescribed thickness until the final surface finish is applied.

After the skull casts were completely covered with clay strips of the correct thickness, then the open spaces between strips were filled in, the desired thickness rechecked and the final finishing of the surface completed. Aging the skin surface to the estimated age at death is one of the important finishing details (quite imperative, of course, in forensic cases).

A practice established between us in all cases has been to maintain close communication at certain critical stages between the artist-anthropologist (SAL) and the physical anthropologist (GWG), in order to minimize error and maximize accuracy in the final facial details. Often the physical anthropologist has knowledge of population-specific details of the face that are not known to the artist, and of course the initial information on the individual (skeletal age, sex, race, prior traumas, disease, etc.), needed to begin the process, must also

be provided by a qualified physical anthropologist.

A series of tests have likewise been conducted between us to allow controlled checks for accuracy in two areas: 1) the skull casts and 2) the final facial appearances. Many initial skull casts were checked metrically against the original skulls to be sure that the casting procedures (particularly the backup molds) are completely effective. Since our casts are used for scientific purposes in some cases (especially where immediate reburial occurs) extreme accuracy in the cranial casts is imperative. After a few initial problems in the early months of production (long before this project was undertaken) the problems were resolved and casts with most measurements within 1-2mm of the original skull on all basic measurements were obtained (see Appendix 1).

To test the effectiveness of our artist-anthropologist (SAL) in the accurate production of final reconstructed faces, another controlled experiment was established. Skulls of two previous forensic cases (where positive identifications were attained and photographs available) were obtained and casts and facial reconstructions done on them (with the photos and background information withheld). Upon completion of the facial reconstructions these were compared to the photographs of the decedents. The likenesses were striking, thus fulfilling our hope that the reconstructions produced by our efforts were true to life as well as aesthetically pleasing to museum curators.

Figure 1. Reconstructed faces of a prehistoric Easter Island female (RH0173) and male (RH 0003)

Figure 1 shows the finalized living faces of the two prehistoric Rapa Nui at the Sebastian Englert Museum, as they presently exist on display. The man's face was produced on a cast from RH0003, an adult male from Ahu Nau Nau excavated by Sonia Haoa and Sergio Rapu in 1978. The woman's face is prepared on a cast of a cranium RH0173 from the south coast of Easter Island. That cranium is unfortunately one of an adult female without specific provenience. Also it is without mandible, so a "generic" adult Rapa Nui female mandible was created for that specimen before facial reconstruction was begun. This was done by selecting an adult female mandible of the appropriate size and shape to fit the skull, and then remodeling its surface features with clay to attain the average dimensions for young adult prehistoric Rapa Nui females (using calculated means of symphyseal height, corpal length, height and breadth of the ascending ramus).

Discussion

During the first week of display of the faces in 1989 at the Sebastian Englert Museum, three local Rapa Nui men visiting the museum expressed a keen interest in the reconstructed face of the prehistoric Easter Island male. Each of them independently expressed the belief that a recognizable resemblance existed between this prehistoric face and the faces of some of the members of an existing family living on Easter Island today. When queried further by the assistant curator of the museum as to which Rapa Nui family possessed members who resembled the ancient Easter Island man, they all answered the family Heri Veri. Those of us in the field at the time were quite interested in these comments, especially since we had not yet posted captions to the faces and casts. Therefore the local villagers had no way of knowing the tribal or lineage area from which the male specimen derived. One of us (GWG) rechecked the site information of the original skull to be certain that it did come from Ahu Nau Nau, the home area of the Miru tribe or the royal lineage of the ancient Rapa Nui. The inspection confirmed that the skull was excavated in 1978 from Ahu Nau Nau. Then we performed a search of genealogical records from Easter Island (Hotus 1986) to see which modern families are descended from the Miru lineage. Among the ones listed was Heri Veri!

Figure 2. Profile photograph of Tadeo Teao Hereveri, a modern descendant of the Miru lineage[3]

Figure 3. Profile of facial reconstruction male (RH0003)

Later attempts to meet and/or photograph male members of the Heri Veri family did result in the photograph shown in Figure 2[3]. The obvious resemblance between the face reconstructed on the ancient Miru male (RH0003) and the faces of living descendants of the Miru lineage is noteworthy. For this to happen not only requires accurate application of facial reconstruction techniques, but a surprising preservation of particular patterns of facial feature for centuries within a prominent Easter Island lineage. Furthermore the preservation of this hereditary line had to endure the incredible decimation of the Easter Island population during the 19th century from disease and slave raids. So, when asked if we believe that anything remains intact on Easter Island today of the ancient race which once inhabited the island, our answer will be a resounding yes!

Documented cases such as this one are important in establishing the validity of these approaches outside of the medico-legal setting and within the context of prehistoric studies.

Footnotes

[1] The 1987-88 Kon-Tiki Expedition to Easter Island was funded by Kon-Tiki Museum, Smithsonian Institution and University of Wyoming. Both an archaeology team (T. Heyerdahl, A. Skjølsvold, H. Martinsson-Wallin, P. Wallin, G. Figueroa, S. Haoa) and a human osteology team (G. Gill, D. Owsley, R. Mann, S. Haoa, S. Long) were involved in the research.

[2] 1989 Human Osteology Collections Curation Project and Sebastian Englert Museum Improvement Project funded by World Monuments Fund (PI: George W. Gill, University of Wyoming).

[3] This photograph provided by Lili Frechet, the wife of Tadeo Teao Hereveri.

References

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Appendix 1
Cranial measurements of original and cast skulls from Easter Island

	EI 1-M Minnesota			EI 3 -M RH0003			EI 5-M RH0211			EI 6-M RH0115			EI 7-F RH0173			EI 8-M RH0195		
	cast	orig	±	cast	orig	±	cast	orig	±	cast	orig	±	cast	orig	±	cast	orig	±
max length	198	198	0	196	195	+1	201	201	0	199	200	-1	180	183	-3*	194	194	-2
max breadth	134	134	0	133	135	-2	128	128	0	136	138	-2	129	130	-1	137	139	-2
basion-bregma	142	142	0	140	143	-3*	145	147	-2	149	148	+1	131	134	-3*	140	140	0
min front breadth	98	98	0	96	96	0	93	92	+1	93	98	-5*	90	92	-2	99	100	-1
bizyg breadth	141	141	0	138	138	0	138	137	-1	136	139	-6*	128	128	0	140	141	-1
ext alv breadth	60	60	0	61	63	-2	63	65	-2	61	62	-1	64	65	-1	65	65	0
nasal height	53	56	-3*	56	53	+3	50	49	+1	51	53	-2	45	45	0	59	56	+3*
nasal breadth	29	29	0	27	25	+2	29	27	+2	28	29	-1	25	27	-2	27	28	-1

* largest variation seen on skull casts
- indicates reduction in cast vs original skull
+ indicates stretch in cast vs original skull